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UNITED STATES DEPARTMENT OF AGRICULTURE  
Rural Electrification Administration  
Technical Standards Committee "A"

Supplement No. 3, April 1989, to  
REA Bulletin 43-5, List of  
Materials Acceptable for Use on  
Systems of REA Electrification Borrowers

The attached pages for the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers" are those which have been revised by action of the Technical Standards Committees during the months of January through March 1989. The following changes should be made in order to keep it up to date. Pages with a comma between are on the same sheet, both being changed.

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Received by:  
Indexing Branch



c - Bolt, machine

Applicable Specification: ANSI C135.1,  
"Standards for  
Galvanized Steel Bolts and  
Nuts" except that the lengths  
are in the ranges given below.

Applicable Sizes : 1/2 inch diameter, 6 through  
10 inch length

5/8 inch diameter, 6 through  
24 inch length

3/4 inch diameter, 6 through  
26 inch length

7/8 inch diameter, 6 through  
28 inch length

The following manufacturers have shown compliance with the applicable  
specifications for machine bolts:

A. B. Chance Company  
Dixie Electrical Manufacturing Company  
Florida Wire and Cable Supply Division  
Hughes Brothers  
\*Joslyn Manufacturing Company  
Kortick Manufacturing Company  
\*McGraw-Edison  
\*Portland Bolt & Manufacturing Company  
Power Line Hardware  
The Rockford Bolt & Steel Company  
Steel City Bolt & Screw Co., Inc.  
Utilities Service Company



\*"Static proof" design available.

d  
April 1989

d - Washers  
FLAT ROLLED STEEL

Size, inches:	2-1/4x2-1/4	3 x 3	4 x 4	4 x 4	1-3/8 round	1-3/4 round
Thickness, in.:	3/16	1/4	3/16	1/2	12 gauge	10 gauge
Hole Diam., in.	13/16	13/16	13/16	13/16	9/16	11/16
C & C Spacer	4					
Chance	6814	6817	6818	6819-1/2	6803	6805
Dixie	D6814	D6817	D6818	D6819-1/2	D6803	-
FWC	FW1076		FW1080		FW1086	FW1088
Hughes	SW2-70	SW3-70	SW4-70	SW4-70(1/2)	RW1-3/8-50	-
Joslyn	J1076	J1079	J1080	J1473	J1086	J1088
Kortick	K1553	K1555	K1557	K1559-1/2	K1524	K1525
McGraw-Edison	DF2W5	DF2W7	DF2W10	DF2W15	DF1W2	DF1W3
Power Line						
Hardware	SWF225A	SWF33B	SWF44A	-	-	-
Utilities						
Service	5485	5487A	5488	5490A	5478	5479

CURVED CAST

Size, inches:	2-1/4x2-1/4	3 x 3	3 x 4	4 x 4
Thickness, in.:	1/4	5/16	7/16	1/2
Hole Diam., in.:	11/16	11/16	15/16	13/16
American Connector (A)		CW 33-5	CW 34-7	CW 44-6
Barron Bethea (N)	GCW-1A	GCW-31	CRW-4A	GCW-41
Continental (N)	-	CW-33-5	CW-34-7	CW-44-6
Flagg (MIF)(M)	P141	P143	P120	P144
Power Line Hardware (M)		CSW-33	CRW-34	CSW-44
Reliable/Bethea (A)	-	WC-33-5	WC-34-7	WC-44-6
Universal Electric (A)	UW-225	UW-335	UW-347	UW-446

CURVED ROLLED STEEL

Joslyn (Steel) J114

FLAT CAST

Barron Bethea (N) BB-214  
Flagg (MIF) (N) P56A

SPURRED

3" Round, 3/16" Thick, 13/16" Hole

Continental (N) TCSF-30-6  
Flagg (MIF) (M) PX159A

(A) Aluminum Alloy  
(M) Malleable Iron  
(N) Nodular Iron

j  
July 1988

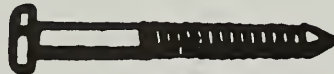
j - Screw, lag

Applicable Specifications: Edison Electric Institute  
Specification TDJ-3 1964,  
"Standards for Lag Screws"

Applicable Sizes : 1/2 inch diameter, 4 inch length  
1/2 inch diameter, 5 inch length  
5/8 inch diameter, 4 inch length  
5/8 inch diameter, 5 inch length

The following manufacturers have shown compliance with the applicable specifications for lag screws:

A. B. Chance Company  
Dixie Electrical Manufacturing Company  
Joslyn Manufacturing and Supply Company  
Kortick Manufacturing Company  
McGraw-Edison  
Utilities Service Company





k-1  
April 1989

k - Insulators, suspension

ANSI Class Type	52-9 Clevis	52-1 Clevis	52-4 Clevis	52-3 Ball & Socket
Disc Diameter	4-1/4"	6"	9" or 9-1/2"	9" or 9-1/2"
M & E Rating, lbs.	10,000	10,000	15,000	15,000
Leakage, inches	6-3/4	7	11-1/2	11-1/2
Flashover; kV: Dry-Wet	60 - 30	60 - 30	80 - 50	80 - 50
NOTES	(3)(4)	(3)(4)	(5)	(2)

<u>Manufacturer</u>	<u>Catalog Number</u>			
Chance	C907-1009	C907-1001	-	-
Joslyn (Pinco)	L1814	L1510	L-970	L-960
Lapp	-	-	9100	9000
Locke	16044	16583	15S410	15S409
Porcelain Prod. (Knox)	84300	86012	-	-
Sediver	CT-4R2-M	-	-	-
Victor Insulators, Inc.	817	804	-	-

Notes:

- (2) To be used only on transmission lines.
- (3) To be used only on distribution lines.
- (4) Use two insulators for 12.5/7.2 kV deadends and three insulators for 24.9/14.4 kV deadends.
- (5) Use two insulators for 24.9/14.4 kV deadends.



1-1  
April 1989

1 - Clamp, deadend

DISTRIBUTION

Copper 2 through 6 CWC 4A through 8A		ACSR (Aluminum Clamps)			
		4/0 & 3/0	2/0	1/0	2 & 4
-	ALCOA	302	302	302	302
-	American Connector Engineering	QDA-63	QDA-53	QDA-53	QDA-53
MD-52-N	Anderson/Sq.D	PG57N	PG57	PG-46N	PG-46N
-	Continental	AQD-63	AQD-52	AQD-52	AQD-52
-	C & R	CR-20-90	CR-10-90	CR-10-90	CR-10-90
2111	Joslyn	BT5210	J25392	J25389	J25389
-	Lapp	306120N	306118N	306118N	306118N
-	Reliable/Bethea	DA-20N	DA-15-N	DA-15-N	DA-15-N

1 - Deadend for Steel Strand (Overhead Ground Wire)

TRANSMISSION

For High Strength Steel Strand and Aluminum-Clad Steel Strand

Clamp Type

<u>High Strength Steel</u>		<u>Aluminum-Clad Steel</u>		
<u>Manufacturer</u>	<u>3/8" and 7/16"</u>	<u>7 No. 9 AWG</u>	<u>7 No. 8 AWG</u>	<u>7 No. 7 AWG</u>
Anderson/Sq. D	SWDE-55N			
Continental	FQD-55-3-LW			
Reliable/Bethea	FD-550-N (For use on 3/8" steel strand only)			

1 - Deadend for steel strand (overhead ground wire)

TRANSMISSION

For high strength, extra high strength steel strand and aluminum clad steel strand

Compression Type

Manufacturer	High Strength Steel		Aluminum-clad steel		Extra High Strength	
	3/8"	7/16"	7 No. 9 AWG	7 No. 8 AWG	5/16"	7/16"
Fargo	861255	861430	861225	861227	861022	861225 861430
Alcoa	4620.12	4627.14				
Burndy	YTW375E	YTW438E	YTW7M9T	YTW7M8T		YTW7M7T
Homac	Order by wire size and type					

Formed Type\*

Chance	16M-AWTLG	20M-AWTLG
Helical Line Prod.	HG210-3/8 HG211-7/16 HG523-12.5M	HG528-20M HG209-5/16 HG210-3/8 HG211-7/16

\* Class B galvanizing. When overhead groundwire has Class C galvanizing, formed deadend should also have Class C galvanizing.

Automatic Type

Fargo	GDE-302	GDE-303	GDE-302	GDE-303	GDE-301 GDE-302 GDE-303
Reliable	5202	5203	5202	5203	5201 5202 5203

Conditional List

1(1)

April 1989

1 - Clamp, deadend

DISTRIBUTION

2-Bolt Straight Line, Aluminum Alloy

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
* <u>American Connector Engineering</u> Aluminum alloy deadend Catalog No. SDA 53 (#4-3/0 ACSR)	1338 (4/2/87)	(a) To obtain experience (b) Applications limited to replacements under hot line conditions.
* <u>Anderson/Square D</u> Aluminum alloy deadend Catalog No. ADS-48-N (2/0 ACSR) Catalog No. ADS-60-N (3/0 ACSR)	1130 (1/5/78)  1148 (9/28/78)	(a) To obtain experience (b) Applications limited to replacements under hot line conditions.
* <u>Barron Bethea</u> Aluminum alloy deadend Catalog No. SDF-10A (4 through 4/0 ACSR)	871 (7/6/67)	Same as above.
* <u>Burndy</u> Aluminum alloy deadend Catalog No. CUW26RE-1 #2-2/0 Str. Aluminum #4-2/0 ACSR	1255 (3/24/83)	Same as above.

\*Straight line deadend clamps are applicable for urban construction where tensions are moderate and on lines often worked hot.

1 - Clamp, deadend

DISTRIBUTION

2-Bolt Straight Line, Aluminum Alloy

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>*C &amp; R Products</u>		
Catalog No. CRDE-10-180 (No. 4 thru No. 2/0 ACSR)	918 (5/15/69) 1331 (11/20/86)	(a) To obtain experience. (b) Applications limited to replacements under hot line conditions.
Catalog No. CRDE-20-180 (No. 3/0 and No. 4/0 ACSR)		
<u>*Continental</u>		
Aluminum Alloy deadend Catalog No. HDSO-57 (with side opening) (4-4/0 ACSR)	1244 (10/7/82)	Same as above.
Catalog No. SGA-52-23 (4-2/0 ACSR)		
Catalog No. SGA-60 (3/0-4/0 ACSR)		
<u>*Fargo</u>		
Aluminum alloy deadend Catalog No. GD-961A side opening keeper (No. 4 and No. 2 ACSR)	1258 (5/5/83) 1144 (8/3/78)	Same as above.
Catalog No. GD-972A (2/0, 3/0, 4/0 ACSR)	791 (4/30/64)	
<u>*Reliable/Bethea</u>		
Aluminum alloy deadend Catalog No. ASO-684-2 (1/0, 2/0, 3/0 ACSR)	961 (2/18/71)	Same as above.
Catalog No. ASD-2-N (4-2/0 ACSR)	1201 (12/4/80)	Same as above.
Catalog No. ASD-34-N 3/0, 4/0 ACSR	1371 (10/6/88)	Same as above.

\*Straight line deadend clamps are applicable for urban construction where tensions are moderate and on lines often worked hot.



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m - Clamp, suspension

2 BOLT - DISTRIBUTION

	<u>Copper &amp; CWC 6240</u>	<u>ACSR with 4 6241</u>	<u>Straight or 2 6242</u>	<u>Formed 1/0 &amp; 2/0 6243</u>	<u>Armor Rods 3/0 &amp; 4/0 6244</u>
ABB					
American Connector	FLS-53	ALS-62	ALS-62	ALS-86	ALS-105
Anderson/Square D	MS-46-N	MS-60-N	MS-70-N	HAS-85-N	HAS-104-N
Barron Bethea	FWG-1	FWG-2	FWG-3	FWG-4	-
C & R Products	-	-	-	CRSC-1	CRSC-2
Continental Electric	FSC-46-N	FSC-60-N	SC-70-N	SC-85-N	SC-105-N
Dulmison	-	-	-	-	HSU*
Joslyn (Brewer Titchener)	6240	6241	6242	6243	6244
Lapp	305740N	306027N	306028N	306029N	306030N
Preformed	-	-	-	-	AGS*
Reliable/Bethea	FS-46-N	GW-1-N	LS-0-N	LS-1-N	LS-2-N

\*Accepted for larger sizes.

o - Bolt, eye, oval

Applicable Specification: ANSI C135.4, "Standards for Galvanized ferrous Eye Bolts and Nuts for Overhead Line Construction."

Applicable Sizes : 5/8 inch diameter, 6 inch through 20 inch length

3/4 inch diameter, 8 inch through 20 inch length

The following manufacturers have shown compliance with the applicable specifications for oval eye bolts:

Berny's Forging Company  
A. B. Chance Company  
Dixie Electrical Manufacturing Company  
\*Joslyn Manufacturing Company  
Kortick Manufacturing Company  
\*McGraw-Edison  
Power Line Hardware  
Utilities Service Company

\*"Static proof" designs available.



Shoulder Eye Bolt  
for Transmission Structures

3/4 inch diameter, 8 inch through 20 inch length

Catalog Number

Joslyn  
Kortick

J9528 to J9540  
K9558 to K2570



p-1  
April 1989

p - Connectors, Distribution (Parallel Groove)

Applicable Specification, "REA Specification for Connectors," DT-8

ACSR to ACSR To same size or smaller Bare Conductor					
	4/0 - 2/0	1/0	2	4	
Alcoa		396.6	490.0	490.0	
Anderson/Sq. D	LC-53A	LC-51C	LC-51A	LC-51A	
Blackburn	PAE 4141-9	PAE 2121-9	PAE 2121-9	PAE 2121-9	
Burndy	KVS28A	UCG25R	UC25R2R	UC25R2R	
Electrical Specialty Products, Inc.	PG-53A	PG-51C	PG-51C	PG-51C	
Fargo	GA-614	GA-620	GA-620	GA-620	
Joslyn	6053	6052	6052	6052	
Penn-Union	PCAA-20BF	PCAA-15BF	PCAA-10BF	PCAA-10BF	
Reliable/Bethea	APG-3	APG-2	APG-1	APG-1	
	Over Armor Rods				
	3/0	2/0	1/0	2	4
Anderson/Sq. D	LC-83A	LC-52C	LC-52C	LC-52C	LC-52C
Blackburn	-	-	PAA10	PAA10	PAA10
Burndy	-	-	UC32R	UC32R	UC32R
Electrical Specialty Products, Inc.	-	-	PG-52C	PG-52C	PG-52C
Fargo	GA-9843	GA-9842	GA-616	GA-616	GA-616
Joslyn	-	-	744AL	600AL	600AL
Penn-Union	-	-	ARC-12	ARC-11	ARC-14
Reliable	-	-	744AL	600AL	600AL

p - Connectors, Service (Parallel Groove)

Applicable Specification, "REA Specification for Connectors,"DT-8

Aluminum-to-Aluminum

Solid or Stranded

	<u>No. 2</u>	<u>No. 4</u>
Alcoa	490.0	490.0
Anderson/Sq. D	LC-51A	LC-51A
Reliable/Bethea	APG-1	APG-1
Blackburn	PAE 2121-9	PAE 2121-9
Burndy	UC25R2R	UC25R2R
Electrical Specialty Products, Inc.	PG-51C	PG-51C
Fargo	GA-620	GA-620
Joslyn	AL24KK	AL46KK
Penn-Union	PCAA-10BF	PCAA-10BF

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p - Connectors, Service (Parallel Groove)

Applicable Specification: "REA Specification for Connectors," DT-8

Aluminum-to-Copper

Solid or Stranded

	<u>2 Al to 4 Cu</u>	<u>4 Al to 6 Cu</u>
Anderson/Sq. D	LC-511A	LC-511A
Blackburn	PAC345	PAC345
Fargo	GA-620C	GA-620C
Joslyn	AL24UU	AL46UU

p - Connectors, Service

Applicable Specification, "REA Specfication for Connectors," DT-8

Copper-to-Copper

Solid or Stranded

<u>Manufacturer</u>	<u>No. 4</u>	<u>No. 6</u>
Anderson/Sq. D	4E	6ES
Blackburn	4N	6N
Burndy	KP4C	KP6C
Dante	SE-3	SE-2
Dossert	ES-4	ES-6
Fargo	GC-5004	GC-5006
IlSCO	SX-4	SX-6
Joslyn	R46	R68
Penn-Union	SX4	SX6

p - Connectors, Guy Bond (Parallel Groove)

Applicable Specification: "REA Specification for Connectors,"DT-8

ACSR to Guy Strand

	<u>2/0</u>	<u>1/0</u>	<u>2 &amp; 4</u>
Alcoa	396.6	396.6	490.0
Anderson/Sq. D	LC-52A-GP	LC-51C-GP	LC-51A-GP
Blackburn	PAE 2121-9	PAE 2121-9	PAE 2121-9
Burndy	UC 28R	UCG25R	UCG25R
Dossert	AC103-LW	AC101-LW	AC100-LW
Electrical Specialty Products, Inc	PG-52A-GP	PG-51C-GP	PG-51C-GP
Fargo	GA-616	GA-620	GA-620
Joslyn	744AL	555AL	438AL
Penn-Union	ALC-15	ALC-10	PCA-010
Reliable	744AL	555AL	438AL

Copper to Guy Strand

Anderson/Sq. D	LC-511A
Blackburn	K-1
Burndy	UC8W26L
C & R	CRJC-1
Dossert	UDV 13-1-P
Fargo	GC-8040P
ILSCO	SK-3 (1/4")
	SK-1/0 (3/8")
Joslyn	J8300
Kearney	9968-1
Krueger & Hudepohl	UC58B-EV
Penn-Union	JC-1-AC
	(1/4", 3/8" guy strand)
	(1/0 strand copper max.)
Reliable	438ALC

p - Connectors, Compression

DISTRIBUTION

	<u>Aluminum to aluminum</u>	<u>Aluminum to copper</u>	<u>Copper to copper</u>	<u>Tap Connections (Al to Al, Al to Cu)</u>
Anderson/Sq. D	AC Series	AC Series	VCUC	VCP
Blackburn			Type CF	
Burndy	"Hycrimp"	"Hycrimp"	Crimpit"	"Cabelok Crimpit"
Electrical Specialty	"Squeeze Conn" (Type S)	Squeeze Conn" (Type S)	-	-
Homac	H Tap-OB&DB	H Tap-OB&DB	-	H Tap-OB&DB
Kearney	"Squeezeon" (Aluminum)	"Squeezeon" "Aluminum"	"Squeezeon" (Copper)	"Squeezeon" (Aluminum)
Penn-Union	"Press-On" (Aluminum)	"Press-On" (Aluminum)	"Press-On" (Copper)	"Penn-L-Tap"

p - Connectors, Compression

SERVICE

	<u>Aluminum-to-Aluminum</u> <u>Aluminum-to-Copper</u>	<u>Copper-to-Copper</u>
Anderson/Sq. D	VAUS	VCCS
Blackburn	CS, KL	-
Burndy	"Linkits"	YDS-C, YDS-W
Electrical Specialty	VSE	-
Homac	"Shure Splicers"	-
Kearney	"Serv-ens"	-
National Tel. Supply	"Nicopress"	-
Penn-Union	"Penn Sleeves"	-

These connectors are furnished in a variety of sizes to fit all combinations of aluminum and copper service wire.



p - Connectors, Transmission

BOLTED TYPE

Applicable Specification: "REA Specification for Connectors," DT-8

ACSR to ACSR  
ACSR to Copper



Alcoa

580 Series

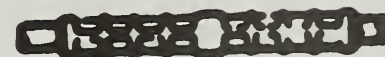
Burndy (ACSR to ACSR)

UP-A, UP-R

When ordering these clamps specify size, stranding and material of both conductors.

Compression Type

ACSR to ACSR  
Same Size



Conductor  
Size

	<u>Alcoa</u>	<u>Anderson</u>	<u>Burndy</u>	<u>Kearney</u>	<u>Blackburn</u>
1/0	5074.438	VPUS	YCS25R	OHR-1/0-61AJ	RCJ10
2/0	5074.484	-	YCS26R	OHR-2/0-61AJ	RCJ20
3/0	5075.547	Order	YCS27R	OHR-3/0-61AJ	RCJ30
4/0	5075.609	by	YCS28R	OHR-4/0-61AJ	RCJ40
266.8 kcmil	5076 Order by	Conductor	YCS30R	HR-266-267AJ	RCJ266M
336.4 kcmil	5076 stranding	Size	YCS33R	HR-336-267AJ	RCJ336M

ACSR to Copper

Alcoa	5070 Series
Anderson/Sq. D	VPUS
Burndy	YCR-R-CA

(Order by conductor sizes)

p - Connectors

(wedge type)

<u>Manufacturer</u>	<u>Aluminum-to- aluminum</u>	<u>Aluminum-to- copper</u>	<u>Copper-to- copper</u>	<u>Tap Connections (Al to Al, Al to Cu)</u>
AMP	"Ampact" (Aluminum)	"Ampact" (Aluminum)	"Ampact" (Copper)	"Ampact" (Aluminum)
Connector Products, Inc.	Aluminum Tap Connector	Aluminum Tap Connector	---	Aluminum Tap Connector
UTM	"Wrench-Lok"	"Wrench-Lok"	--	"Wrench-Lok"

p - Connectors

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Anderson/Square D</u> Compression al to al al to cu "Versa-Crimp" L tap.	748 11/1/62	To obtain experience
Parallel groove, aluminum LC-52C (1/0 - 6/1 ACSR over armor rods) LC-51C (1/0 - 6/1 ACSR)	738 6/21/62	" " "
<u>Burndy</u> Compression, insulated "Insulink"	672 8/6/59	" " "
<u>Blackburn</u> Compression, insulated service entrance con- nectors, Types ICS-1 and IKL	1027 10/11/73 1133 2/16/78	" " "
Bolted, insulated IPC 1102 (#2-1/0 run, #2 tap) IPC 4111 (1/0-4/0 run, #2-1/0 tap) IPC 4141 (1/0-4/0 run, 1/0-4/0 tap)	1327 9/11/86 1330 10/30/86	1. For use on 600 volt maximum insulated conductors.  2. To be used only for connecting service drop conductors to service entrance conductors.  3. To obtain experience.
<u>Homac</u> Compression, Insulated "Shure Splicers" Types Q1N and U1N	1074 9/25/75 1269 11/17/83	" " "

## Conditional List

p(2)

April 1989

## p - Connectors

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Kupler</u> Bolted, insulated 130001 (#2-1/0 run, #2 tap) 130003 (1/0-4/0 run, #2-1/0 tap) 130004 (1/0-4/0 run, 1/0-4/0 tap)	1306 (9/26/85)	1. For use on 600 volt maximum insulated conductors.  2. To be used only for connecting service drop conductors to service entrance conductors.  3. To obtain experience.
<u>Penn Union</u> Compression, Insulated Type PIK	866 2/8/68	To obtain experience.
<u>Raychem</u> Solder Type PowerSleeve	1378 2/9/89	To obtain experience.
<u>Utilco</u> Two bolt style, al to al Type PM	1053 11/14/74	To obtain experience.

u - Deadend for alumoweld guy strand

Strand Size	3#10(4M)	7#12(6M)	7#11(8M)	7#10(10M)	7X.110"(11.5M)	7#9(12.5M)	7X.121"(14M)	7#8(16M)	7X.148"(20M)
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Formed Type  
Alumoweld Guy Strand

Change For standard guy	6M-AWTLG	8M-AWTLG	10M-AWTLG	12.5M-AWTLG					
Helical Line Products For standard guy	HG517-6M	HG519-8M	HG521-10M	HG523-12.5M	HG524-14M	HG525-16M	HG528-20M		
Preformed Line Products For standard guy	AWDE-4108 WGL-4110	AWDE-4113 WGL-4113	AWDE-4116 WGL-4116	AWDE-4119 WGL-4120	AWDE-4120	AWDE-4122	AWDE-4126		
For wrapped guy									

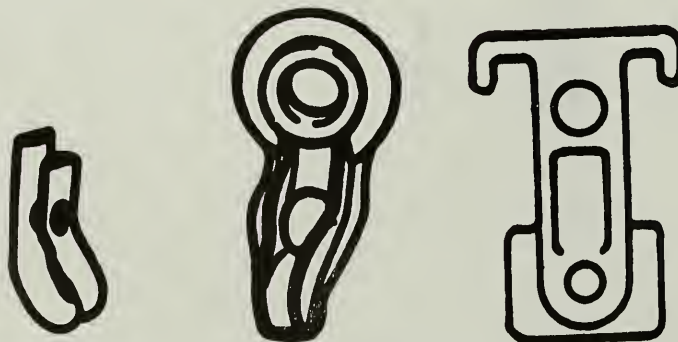
Automatic  
Alumoweld Guy Strand

Large Reliable	GDE-300 5200	GDE-301 5201	GDE-301 5201	GDE-302 5202
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v-1  
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v - Guy Attachment  
for 5/8" bolt

<u>Type:</u>	<u>Formed Strap</u>	<u>Angle Bolt Eye</u>	<u>Guy Hook</u>	<u>Guy Hook</u>
<u>Maximum Working Load Rating</u>	23,130 N (5200 lbs.)	23,130 N (5200 lbs.)	23,130 N (5200 lbs.)	37,800 N (8500 lbs.)
Anderson Elec./ Square D	-	-	-	-
Barron Bethea	-	-	-	GH-5
Chance	5004	0100	C203	C203-0168
Continental Electric	-	-	GAD	GAD-56-4
Dixie	D5004	D0100	DD-9460	DD-9462
Flagg (MIF)	-	-	P151A,	P151X
Joslyn	J25164	J6500	J6555, J6556	-
Kortick	K4035, K4047	K3140	-	-
McGraw-Edison	DG6H1	DG11E1	DG21H1 DG21H2	-
Power Line Hardware	-	-	-	HGA-58C
Reliable/Bethea	-	-	-	AG-5
Universal Electric	-	-	-	UGA-56C
Util. Service	31030	5531	-	-



\*This hook may be used in place of the wrapped guy arrangement in assemblies E3-2 and E3-3.



Pole Eye Plates  
(5/8" Bolt)

<u>Type</u>	<u>Pole Eye Plate</u>
<u>Maximum Working Load Rating</u>	<u>37,800 N. (8500 lbs.)</u>
Anderson Elec./ Square D	GSP-05
Continental Electric	PEP-66-45
Flagg (MIF)	PX88
Power Line Hardware	PGA-548
Reliable/Bethea	PE5-6A



Conditional List

v

July 1988

v - Guy attachment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Joslyn		
Pole Band, with cone head	745	To obtain experience.
bolt, J-6281 and guy clip	8/16/62	For distribution lines
J-6275		only and 10,000 lbs
J-6280 (for 6" to 10" pole)		maximum loading.
J-6270 (for 8" to 14" pole)		

ah - Tie, insulator, formed type

Manufacturer

Type

Chance

Tygard Type AWTY-56\* (Side tie for use over armor rod on spool insulator with 1-3/4" groove)

Super Top-Tie, Type STT for single or double support use, with insulators 2-1/4" through 3-1/2" neck diameter and single support use on spool insulators with 1-3/4" groove diameter (Order for specific conductor size.)

Preformed Line Products

WT "Wraplock"  
(Order for specific conductor size and insulator)

ST "Groove-Formed"  
side tie (Order for specific conductor size and insulator)

Spool Tie for ACSR, Type SPL\* (Side tie for use on spool insulator with 1-3/4" groove)

DST double support top tie  
(Order for specific conductor size and insulator)

DBST double side tie  
(Order for specific conductor size and insulator)

\*Not for side mounting on pin or post insulators.

ai - Rods, Ground

Applicable Size: The standard length is 8 feet and catalog numbers listed below are for this length. Longer rods may be required for special conditions.

Copper-covered ground rods are listed with a 13 mil minimum at any point and a 15 mil average covering of copper. All purchases should specify that a factory certification of the thickness of the copper must accompany the shipment of the rods.

Copper-covered steel rods

5/8"

Apache	GR588
Blackburn	6258
Boggs	EB810
Calpico	CP588
Carolina Galvanizing	P-588
Erico	E858
Joslyn	J8338
Knight	858
Korns	KCG58
Kortick	K5428
Power Line Hardware	GR-588C
Utilities Service	6617
Wilcor	WA588C

Stainless Clad Steel

<u>Manufacturer</u>	<u>5/8"</u>	<u>3/4"</u>
Teledyne (MEFCO)	"PERMAGROUND"	"PERMAGROUND"

ai - Rods, Ground

Applicable Size: The standard length is 8 feet and catalog numbers listed below are for this length. Longer rods may be required for special conditions.

Hot Dip Galvanized Steel

<u>Manufacturer</u>	<u>5/8"</u>	<u>3/4"</u>
Blackburn	GR6258	GR7508
Boggs	G588	G348
	PTG588**	PTG348**
Carolina Galvanizing	G588	G348
	G-588PT**	G-348PT**
Chance	8578	8618
	C203-0107**	C203-0109**
	C203-0377*	
Dixie	D8578	D8618
Erico	G588	G348
	G588PT**	G348PT**
Galvan	GR6258	GR7508
General Electric	0982-00002	0982-00003
Grip-Tite	GT588	GT348
	GT588PT**	GT348PT**
Joslyn	J3358B*	J3458B*
	J5328	J5338
	J5228**	J5238**
Knight	G-588	G-348
	G-588PT**	G348PT**
Korns	KG58	KG34
Kortick	K4658	K4678
Lloyd	6258H	7508H
McGraw-Edison	DN5S8	DN6S8
	DN6D8*	
National Utility Products	UR1016-8	UR1216-8
Porcelain Products	7338	7348
Power Line Hardware	GR-588G	GR-348G
Utilities Service	5307	6338
Wilcor	WA8580G	WA8340G

Electro-Galvanized Steel

Apache	G588**	G348*
	G588PT**	G348PT**
Calpico	G8580	-
LMP	6258E**	7508E**

Stainless Steel

Teledyne (MEFCO)	TDY Sol	TDY Sol
Wilcor	WA 588-S	WA348-S

\*Rod furnished with clamp.

\*\*Rod furnished with 4 ft., No. 6 tinned or galvanized copper pigtail.

ai - Rods, ground, sectional

Galvanized steel and  
copper-covered steel

Copper-covered ground rods are listed with a 13 mil minimum at any point and a 15 mil average covering of copper. All purchases should specify that a factory certification of the thickness of the copper must accompany the shipment of the rods.

Sectional Ground Rods

<u>Manufacturer</u>	<u>8' long</u>	<u>10' long</u>	<u>Coupling</u>	<u>Driving studs</u>
Blackburn	6258S	6260S	60C	60DS
Carolina Galv.	S-588 GSD-588 GSD-348	S-5810 GSD-5810 GSD-3410	CR58 CG250 CG250	DSH58 DSH58 DSH58
Chance Galv. Steel	C203-0052	8512	8611	-
Demark	-	-	GRC 58G	-
Erico	ES858	ES1058	CR58	DSH58
Joslyn Galv. Steel	J9158 J23282.8	J9160 J23282.10	J9182 J23282A	J9186 J9186
Knight	S858 GSD858 GSD834	S1058 GSD1058 GSD1034	SC58 KG250 KG260	DS58 DS58 DS34
Kortick	K5441	K5443	K5482	K5492
McGraw-Edsion Galv. Steel	DN17S8	DN16S10	DN1K2	-
Power Line Hardware	GR-588CS	GR-5810CS	CBC-58	DS-58
UTM	-	-	910-030-05	-



a1 - Staples, ground wire

Applicable Specification: ANSI C135.14, "Standards for  
Staples with Rolled or Slash  
Points."

Length x Spread (inches)	1-1/2 x 1/4	2 x 1/2	1-1/2 x 3/8	3 x 1-1/16
Diameter	9 gauge <u>Galv. Steel</u>	8 gauge <u>Galv. Steel</u>	8 gauge <u>Copper-Coated</u>	1/4 <u>Moulding</u>
Apollo	AP521-S1672G	AP521-S1570	AP501-S6652	AP500-S6497
Blackburn	-	-	CUS9	CUS22
Chance	C205-0247	C205-0216	9167	9161
Copperweld Southern		-	CP52	-
FWC	FW1672G	FW157	FW6652	FW6497
Joslyn	J1672G	J157	J6652	J6497
Kortick	-	-	K247	K236
Larson	-	350453	750233	721312
Utilities Service 88		86	48	46

Barbed staples, ground wire

Length x Spread (inches)	1-1/2 x 3/8	2 x 5/8	1-1/2 x 3/8	3 x 1-1/16
Diameter	.131 <u>Galv. Steel</u>	.165 <u>Galv. Steel</u>	.140 <u>Copper-Coated</u>	7/32 <u>Galv. Steel</u>
Apollo		AP520-57488HTG	AP501-S66525	
Joslyn	J7656	J7672	J7682	J7664

Staples, alumoweld			
Length x Spread (inches)	2 x 1/2	1-1/2 x 3/8	3 x 1-1/16
Diameter	8 gauge <u>8 gauge</u>	8 gauge <u>8 gauge</u>	1/4 moulding <u>1/4 moulding</u>
Apollo	AP531-S6655AL	AP531-S6652AL	AP530-S7493AL
Joslyn	-	J6652AL	J-7493AL

Clip, ground wire

Conditional List  
al  
July 1988

al - Staples, Ground Wire

Clip, Ground Wire

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Fastex (ITW)</u> No. 780-2	1038 4/4/74	To obtain experience.



an - Transformers, Power  
Single-Phase, Step-Down  
for Distribution Substation Use

Applicable Specification: REA Specification for Step-Down Substation Transformers, S-3

Transformers with 115 kV and 138 kV primary voltage ratings are acceptable with full BIL and with one step reduced BIL.

"X" indicates that acceptable test data have been furnished REA for this rating and for secondary voltages in either 15 kV or 25 kV class.

All acceptances are based on standard impedances, taps, winding designs, materials and accessories. Variations should not be ordered except under special circumstances. Complete design tests should be specified for special designs.

Primary  
Voltage-kV

	167	250	333	500	833	1250	1667	2500	3333	5000	6667	8333	10,000
--	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	--------

Central Moloney

34.4

X X X X

General Electric

34.4

X X X X

43.8

X X X X

67.0

X X X X

115

X X X X

138

X X X X

Hevi Duty

34.4

X X X X

43.8

X X X X

67.0

X X X X

115

X X X X

X

an - Transformers, Power  
Three-Phase, Step-Down  
For Distribution Substation Use

Primary Voltage-kV	KVA					MVA									
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30	
General Electric															
34.4	X	X		X	X	X	X	X	X	X	X	X			
43.8	X	X		X	X	X	X	X	X	X	X	X			
67.0	X	X		X	X	X	X	X	X	X	X	X	X	X	
115							X	X	X	X	X	X	X		
138							X		X	X	X	X	X	X	

Transformers 5 MVA and larger also accepted as load tap changing transformers using General Electric Types LR72, LR65 and LRT-200 load tap changers.

Hevi-Duty

34.4	X		X		X	X	X	X	X	X	X			
43.8					X	X	X	X	X	X	X	X	X	
67.0	X		X		X	X	X	X	X	X	X	X		
115						X	X	X	X	X	X	X	X	
138						X	X	X	X	X	X	X	X	

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A and UTT-B and Siemens Allis Type TLS load tap changers.

Kuhlman

34.4					X	X	X	X	X	X	X		X	
43.8					X	X	X	X	X	X	X	X		
67.0					X	X	X	X	X	X	X	X	X	
115					X	X	X	X	X	X	X	X	X	
138					X	X	X	X	X	X	X	X	X	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using Siemens-Allis Types TLS and TLH-21 load tap changers.

North American Transformer

67.0					X					X	X	X	X	X
115										X	X	X	X	X
138										X	X	X	X	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using North American type TC-525 load tap changers.

an - Transformers, Power  
Three-Phase, Step-Down  
For Distribution Substation Use

Primary Voltage-kv	kVA					MVA									
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30	
<u>McGraw-Edison</u>															
34.4		X		X	X	X	X	X	X	X					
43.8		X		X	X	X	X	X	X	X					
67.0		X		X	X	X	X	X	X	X					
115											X		X		
138											X				

Transformers 5 MVA and larger also accepted as load tap changing transformers using McGraw-Edison Types 550, 550B, and 550C load tap changers.

<u>ABB</u>															
34.4							X	X	X	X	X				
43.8									X						
67.0				X		X	X	X	X	X	X	X	X	X	X
115							X	X	X	X	X	X	X	X	X
138							X	X	X	X	X	X	X	X	X

Transformers 5 MVA also accepted as load tap changing transformers using ASEA Electric Type UZD load tap changers.

<u>Westinghouse</u>															
34.4		X	X	X	X	X	X	X	X					X	
43.8		X	X	X	X	X	X	X	X	X	X				
67.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
115											X	X	X	X	X
138											X	X	X	X	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A, UTT-B and UVW load tap changers.

an - Transformers, Power  
Single-Phase, Step-Down  
For Distribution Substation Use

Condition of Acceptance: To obtain experience.

Transformers with 115 kV and 138 kV primary voltage ratings are acceptable with full BIL and with one step reduced BIL.

"X" indicates that acceptable test data have been furnished REA for this rating and for secondary voltages in either 15 kV or 25 kV class.

"S" indicates that performance specifications have been furnished REA and test data are to be submitted when available.

Primary Voltage-kV	kVA Capacity									
	167	250	333	500	833	1250	1667	2500	3333	5000
ABB										
67.0										
ESCO										
34.4	X			X	X					
General Electric										
43.8										
115										
Hevi-Duty										
34.4										
43.8										
67.0										
115										
H. K. Porter (Delta-Star)										
34.4	S	S	S	S	X	X	S			
43.8					S	S	S	X		
67.0					S	X	S	X	X	S
115					S		S	S	S	S
McGraw-Edison										
34.4										
43.8	S	S	S					S	S	S
67.0	S	S						S	S	S
RTE										
34.4				S	X	X	S			

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Condition of Acceptance: To obtain experience.

Primary Voltage-kV	167	250	333	500	1250	1667	2500	3333	5000	6667	8333	10,000
Westinghouse									S	S		
									S	S		
									S	S		
									S	S		



Condition of Acceptance: To obtain experience.

Transformers 5 MVA and larger also accepted as load tap changing transformers using ASEA Electric Type UZD load tap changers.

5

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5 5 5 5 5

transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A and UTT-B and Siemens Allis Type TLS load tap changers.

an - Transformers, Power  
Three-Phase, Step-Down  
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kV	KVA										MVA				
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30	30
<u>H. K. Porter (Delta Star)</u>															
34.4	S	S	S	S	S	X	X	X	S						
43.8	S	S	S	S	S	X	X	X	S	X					
67.0	S	S	X	S	X	X	X	X	X	X	X				
115						X	X	X	S	X	X				
138						S	S	S	S	S	S	S	S	X	

Transformers 5 MVA and larger also accepted as load tap changing transformers using Siemens-Allis  
Types TLS and TLH-21 load tap changers.

<u>McGraw-Edison</u>															
34.4	S	S	S	S	S	X									
43.8	S	S	S	S	S	X									
67.0	S	S	S	S	S	S									

Transformers 5 MVA and larger also accepted as load tap changing transformers using McGraw-Edison  
Types 550, 550B and 550C load tap changers.

<u>MGM</u>															
34.4					S	X	S	S	S						
43.8					X	X	S	S	S						
67.0					S	S	X	X	S						

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse  
Types UTS-A and UTI-B load tap changers.

<u>RIE</u>															
34.4			S	S	X	X	X								

<u>Utegraff</u>															
34.4	S	S	S	S	S	X	X								
43.8	S	S	S	S	S										

<u>Westinghouse</u>															
34.4	S									S	S	S	S	S	S
43.8	S											S	S	S	S
67.0													S	S	S
115							S	S	S					S	S
138							S	S	S					S	S

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse  
Types UTS-A, UTI-B and UVW load tap changers.

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at - Guy Marker, 8 Foot Length

Steel

<u>Manufacturer</u>	<u>Full Round</u>	<u>Half Round</u>
Joslyn	J1618	J1528
Kortick	K3729	-
McGraw-Edison	DG15G1	DG5G3

at-2  
April 1989

at - Guy Marker  
8 Foot Length  
Plastic or Fiberglass

<u>Manufacturer</u>	<u>Catalog Number</u>
Auburn Extrusions	TK-808 (Yellow) (with bolt type clamp)
Chance	96-PBG-2 (Gray) 96-PBG-2Y (Yellow) 96-PBG-2ORG (Orange)
Chance*	96-FRPMR-GRY (Gray) 96-FRPMR-YEL (Yellow) 96-FRPMR-ORG (Orange) 96-FRPMR-GRN (Green)
Electrical Materials*	70-7G (Gray) 70-7Y (Yellow) 70-7O (Orange)
Joslyn	J1491Y (Yellow) J1491G (Gray)
Joslyn*	J26260.8 (Yellow) J26261.8 (Gray)
Preformed Line Products*	PG-5508 (Gray) PG-5518 (Yellow)
Radar Engineers*	6032 (Yellow)
Tranpol*	HGG-OL8Y-C (Yellow)
Vaughn*	003-7140 (Gray) 004-7140 (Yellow) 005-7140 (White)
Virginia Plastics*	TG-125-8G (Gray) TG-125-8Y (Yellow)
Virginia Plastics**	FG-8G (Gray) FG-8Y (Yellow)

\* For use with formed or automatic type deadends for guy strand; will not fit over bolt type guy clamps.

\*\* Available with either 1 or 2 bolt clamps.

av - Conductor, copper

Applicable Specifications: ASTM Specification B1-81 (or latest revision) for hard-drawn solid  
ASTM Specification B8-81 (or latest revision) for hard drawn stranded and soft stranded  
ASTM specification B3-74(80) (or latest revision) for soft or annealed solid.

Preferred Sizes:	Hard-drawn solid	4 and 6
	Soft or annealed solid	4 and 6
	Hard-drawn stranded	2x3, 1/0 x 7, 2/0 x 7
	Soft stranded	4 and 6

The following manufacturers have shown compliance with the applicable specifications:

Alcan Cable

Allied Tube & Conduit

Cablec

Essex

General Cable

Nehring

Phelps Dodge

Rome Cable

Service Wire Company

Southwire

av-3  
April 1989

av - Conductor, Copperweld-copper

Applicable Specification: ASTM Specification B 229

Preferred Sizes:	<u>Distribution</u>	<u>Transmission</u>
	8A	1/0 F
	6A	2/0 F
	4A	3/0 F
	2A	4/0 F

The following manufacturers have shown compliance with the applicable specification for the sizes indicated:

Copperweld Southern	(All sizes)
Southwire	(2A and smaller)



av - Conductor, Aluminum Alloy

Applicable Specification: ASTM Specification B399

Preferred Sizes:

<u>DISTRIBUTION</u>		<u>TRANSMISSION</u>	
<u>6201</u>	<u>ACSR Equiv.</u>	<u>6201</u>	<u>ACSR Equiv.</u>
48,690 cmil - 7 str.*	4	123,300 cmil - 7 str.**	1/0
77,470 cmil - 7 str.*	2	155,400 cmil - 7 str.**	2/0
123,300 cmil - 7 str.	1/0	195,700 cmil - 7 str.**	3/0
155,400 cmil - 7 str.	2/0	246,900 cmil - 7 str.	4/0
195,700 cmil - 7 str.	3/0	312,800 cmil - 19 str.	266,800 cmil
246,900 cmil - 7 str.	4/0	394,500 cmil - 19 str.	336,400 cmil
		559,500 cmil - 19 str.	477,000 cmil
		652,400 cmil - 19 str.	556,500 cmil
		927,200 cmil - 37 str.	795,000 cmil

\*Not recommended for multiphase lines with span lengths exceeding 300 ft.

\*\*Not recommended for suspension type construction.

The following manufacturers have shown compliance with the applicable specifications:

<u>Manufacturer</u>	<u>Type</u>
Alcan	6201
ALCOA-ACPC	6201
Kaiser	6201
Reynolds	6201
Southwire	6201

Conditional List

av

April 1989

av - conductor

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Copperweld Southern</u>		
Alumoweld-aluminum	863 (4/13/67)	To obtain experience.
6/1 ACSR/AW, #2, #1/0,	984 (2/3/72)	To obtain experience
#2/0, #4/0	1376 (1/12/89)	To obtain experience.
4/3 AWAC, #4, #2, #1/0		
<u>Reynolds Metals</u>		
5005 Aluminum Alloy #4-7	803 (10/22/64)	Where suspension insu-
strand through 4/0-7 strand;		lator type of con-
281,460 cmil-19 strand		struction is employed
(266,800-18/1 ACSR equiv.)		on transmission lines,
through 312,760 cmil-19 strand		the minimum size of
(266,800-26/7 ACSR equiv.)		this conductor to be
		used is 4/0.
<u>Southwire</u>		
5005 Aluminum Alloy #4-7	999 (8/31/72)	Where suspension insu-
strand through 4/0-7 strand;		lator type of con-
557,500 cmil-19 strand		struction is employed
(477,000-26/7 ACSR equiv.)		on transmission lines,
		the minimum size of
		this conductor to be
		used is 4/0.
<u>Alcoa</u>		
795 kcmil 26/7 ACSR/AW	1247 (11/18/82)	To obtain experience.

cj - Pole Ground Wire

Soft annealed iron, BB Grade, class C galvanizing  
(For pole protection only)

Size  
1.15 Ohms/1000 ft., max.

Manufacturer

Bethlehem Steel	3-wire, 5/16 inch
Indiana Steel and Wire	3-wire, 5/16 inch
Southwire	3-wire, 5/16 inch
U. S. Steel	3-wire, 5/16 inch
National Strand Products	3-wire, 5/16 inch

Copper, soft annealed solid  
ASTM Specification B3

Manufacturer  
(See page av-2)

Aluminum (for above ground use only)  
Three-quarter hard-drawn EC grade

Manufacturer  
(See page av-1)

Aluminum Alloy (for above ground use only)

<u>Manufacturer</u>	<u>Type</u>
ALCAN	6201
ALCOA	6201
American Electrical	6201
Kaiser	6201
Reynolds	5005
Southwire	6201, 5005

Copper-Clad Steel, Annealed 40 percent Conductivity

<u>Manufacturer</u>	<u>Size</u>
Copperweld Southern*	No. 6

\* Not for use on distribution when neutral is larger than #1/0 ACSR.

Conditional List

cj  
July 1988

cj - Pole Ground Wire  
Aluminum Alloy (for above ground use only)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>ALCOA</u> 8177	1248 (12/2/82)	To obtain experience.

ct  
July 1988

ct - Plate, Double Arming

<u>Manufacturer</u>	<u>4" x 1/2" x 24"</u>	<u>4" x 1/4" x 17"</u>
Chance	5844	5819
Dixie	D5844	D5845
Joslyn	J1600	J1607
Kortick	K1454	K1465
McGraw-Edison	DP21A1	DP23A3
Power Line Hardware	-	DAP-17
Utilities Service	4117	-

CU  
April 1989

cu - Brace, crossarm, wood

Span, inches	60	60
Drop, inches	<u>18</u>	<u>30</u>
Aluma-Form	6018	6030
American Crossarm & Conduit Company	320	325
Brooks	446060-180D	446060-300D
Cascadian	15018	15030
Dis-Tran	DT-60R	
Hatheway Patterson	320-R	325-R
Hughes Brothers	2045-CC	2045-D
Joslyn	J4760	J4730
Utilities Structures Engineering Incorporated	CU-60-18	CU-60-30

Braces listed below have 26-inch hole spacing. They are to be used in place of the flat steel braces previously listed on page h.

Aluma-Form	AF626
American Crossarm & Conduit	600
Brooks	58128
Hatheway Patterson	7026
Hughes Brothers	2023
Joslyn	J5526

Brace, crossarm, fiber reinforced plastic

Continental	CRB-28
Hughes Brothers	533
Joslyn	RP-26
Tranpol	CAB-28
Stanley Flagg	FCB26



du  
April 1989

du - Link, Extension

DISTRIBUTION

Manufacturer

Catalog Number

Chance  
Continental  
Flagg (MIF)  
McGraw-Edison  
Reliable/Bethea  
Utilities Service

C207-0112  
CEL-14  
PA319  
DC33B6  
LCE-14  
495

TRANSMISSION

(25,000 lbs. min. strength)

Reliable/Bethea Products  
Joslyn

ASM 7209-1-BC  
J26082

Guy Extension Link  
(For "H" Structure)

Manufacturer

One Guy Attachment

Two Guy Attachment

Joslyn

J22421

J26025

NOTE: The distribution extension links may be substituted for anchor shackle (Item bo), eye bolt (Item o) and eye nut (Item aa) for both small and large conductor drawings shown in REA Form 803 and REA Bulletin 50-3 at the option of the owner.

## Conditional List

du(1)

July 1988

## du - Connecting Links

Conditions: To obtain experience in conjunction with pole bands [Item fv(1)]  
Strength Rating: 25,000 lbs. ultimate loading.

<u>Manufacturer</u>	<u>Link to guy</u>	<u>Size</u>	<u>Meeting No. and Date</u>
Hughes	3154 Link to Insulators	3/8" x 2" x 9-1/2"	1172 9/20/79
Hughes	3176	3/8" x 3" x 9-1/2"	1172 9/20/79
	<u>Link to guy</u>		
Joslyn	J26033	3/8" x 2" x 9-1/2"	1292 1/10/85
	<u>Link to Insulators</u>		
Joslyn	J26034	3/8" x 3" x 9-1/2"	1292 1/10/85

ea - Insulator and Stud, post type

DISTRIBUTION

System voltage, kV	12.5/7.2*	12.5/7.2*	24.9/14.4**
Leakage, inches	7-1/2	10	15
Flashover, dry, kV	65	70	95
Flashover, wet, kV	<u>40</u>	<u>50</u>	<u>65</u>
<u>Chance</u>			
7" Stud	C903-1910-04	C903-1911-04	C903-1912-04
1-3/4" Stud	C903-1910-05	C903-1911-05	C903-1912-05
<u>Lapp</u>			
7" Stud	4415P	4420P	4427P
1-3/4" Stud	4315P	4320P	4327P
<u>Newell Porcelain</u>			
7" Stud		43400-7040	43401-7040
1-3/4" Stud		43400-7010	43401-7010
<u>Porcelain Products (Knox)</u>			
7" Stud	5115-6510	5120-6510	5127-6510
1-3/4" Stud	5115-6500	5120-6500	5127-6500

TRANSMISSION

System voltage, kV	22	34.5	46
ANSI Class	57-2	57-3	57-4
Flashover, dry, kV	110	125	150
Flashover, wet, kV	<u>85</u>	<u>100</u>	<u>125</u>
<u>Chance</u>			
7" Stud	C903-1002-04	C903-1003-04	
1-3/4" Stud	C903-1002-05	C903-1003-05	
<u>Lapp</u>			
7" Stud	9435	9445	9455
1-3/4" Stud	9335	9345	9355
<u>Newell Porcelain</u>			
7" Stud	37620-7040	41640-7040	41650-7040
1-3/4" Stud	37620-7010	41640-7010	41650-7010
<u>Porcelain Products (Knox)</u>			
7" Stud	5135-6512	5145-6512	
1-3/4" Stud	5135-6502	5145-6502	

NOTE: Post Insulators (item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

\*The transverse loading on these insulators shall not exceed the lower of 40 percent of the insulator's ultimate strength and the maximum transverse loading given for the structure in REA Bulletin 50-3.

\*\*The transverse loading on these insulators shall not exceed 40% of the insulations' ultimate strength.

ea-2  
April 1989

ea - Insulators, horizontal post type

<u>Manufacturer</u>	<u>34.5 kV</u>	<u>69 kV</u>	<u>115 kV</u>
Lapp	F-4745	F-4788	F-70147
Locke	-	LS02513	LS05013
Newell Porcelain	43740	43790	47043
Victor Insulators, Inc.	62356	-	-

eh  
January 1989

eh - Hook, ball

<u>Manufacturer</u>	<u>Catalog Number</u>
Anderson Elec./Square D	HB-30
Reliable/Bethea	BH-5
Continental Electric Co.	BH-30-5
Flagg	13400
Joslyn (Brewer-Titchener)	3001-HT
Lapp	7055
Lindsey	3310
Power Line Hardware	BH-30

ei - Clamps, suspension with socket eye

ACSR with Straight or Formed Armor Rods

	AWG			kcmil						
	1/0 & 2/0	3/0	4/0	<u>Iron or Steel Clamps</u>						
				266.8	336.4	477	556.5	795	954	
Anderson	MS-82-S	--	MS-104-S	MS-104-S	--	--	--	--	--	
Barron Bethea	FGW-4S	--	--	--	--	--	--	--	--	
Joslyn	6203	6204	6204	6205	6255	6257	--	--	--	
(Brewer Titchener)										
Lapp	305743S	--	--	--	--	--	--	--	--	
Reliable/Bethea	FS-83-S	--	--	--	--	--	--	--	--	

ACSR with Straight or Formed Armor Rods

	AWG			kcmil					
	1/0 & 2/0	3/0 &	4/0	Aluminum Alloy Clamp					
Anderson C & R	HAS-85-S	HAS-104-S		HAS-104-S	HAS-118-S	HAS-139-S	HAS-147-S	HAS-182-S	HAS-182-S
	CRSC-1S	CRSC-2S		CRSC-3S	CRSC-3S	--	--	--	--
Continental	SC-85-S	SC-105-S		SC-105-S	SC-119-S	SC-136-S	SC-149-S	SC-177-S	SC-192-S
DuImison	--	HSU		HSU	HSU	HSU	HSU	HSU	HSU
Joslyn (Brewer Titchener)	9503-S	9504-S		9504-S	9505-S	9506-S	--	--	--
Lapp	306029S	306030S		306030S	306031S	306032S	--	--	--
*Preformed	--	AGS		AGS	AGS	AGS	AGS	AGS	AGS
Reliable/Bethea	LS-1-S	LS-2-S		LS-2-S	LS-3-S	LS-4-S	LS-6-S	LS-7-S	LS-8-S

\*Cleviss type available.



es - Splice Cover, Plastic

(For use over compression type service connections  
in place of tape.)

<u>Manufacturer</u>	<u>Type</u>
Anderson/Square D	Type SEC
Blackburn	Type C
Kearney	Type 601
Plastic Engineering & Sales Co.	Wire Splice Cover
3M	PST Series 8420
Virginia Plastics	Type VP

Splice Cover and Moisture Seal for  
Secondary Cable Connections (See  
Drawings G312 and UM5)

<u>Manufacturer</u>	<u>Type</u>
AMP	Sealing & Dielectric Compound
Plymouth/Bishop	10 Plyseal
3M	Scotch Brand #2200

Bolted Connector Cover

(For use over bolted type service connections in place of tape.)

<u>Manufacturer</u>	<u>Type</u>
Fargo	GA-9000 B Series

eu  
January 1989

eu - Extension Link  
(Fiberglass)  
(Distribution)

<u>Manufacturer</u>	<u>Strength</u>	<u>Catalog Number</u>
Anderson/Square D	10,000 lbs. 15,000 lbs.	*GSB1-9 GSB2-12
Barron Bethea	11,000 lbs. 15,000 lbs.	*BB-11-EE-12 BB-15-EE-12
Reliable/Bethea	11,000 lbs. 15,000 lbs.	FGS16-EE-12P FGS16-EE-12P
Continental	11,000 lbs. 15,000 lbs.	*GEE11-12 GEE15-12
Flagg (MIF)	11,000 lbs. 15,000 lbs.	150-12EE 150-12EE
Joslyn-Empire	15,000 lbs.	500-12EE
Tranpol	11,000 lbs. 15,000 lbs.	*HSB-1-12 HSB-2X-12

\*For use with 6" suspension insulators.

fj - Bracket, extension

(For use in mounting oil circuit reclosers or sectionalizers)

See Drawing VM3-10A

	<u>Through Bolt Type</u>	<u>Band Type</u>
Aluma-Form	TBRSM-1, TB2M1-9*	RSM-1
Dixie	D-2359-M	
Joslyn	J2357	
McGraw-Edison	DR2E3	

\*For mounting double lug reclosers.

fk - Bracket, oil circuit recloser or sectionalizer

(For cluster mounting of three oil circuit reclosers on pole)

Aluma-Form	RSM-3, 6M3-9*
*McGraw-Edison	DT8C1
Turner	695-3

\*Suitable for 14.4 and heavy duty 7.2 kV.

fl - Rack, primary metering

(For cluster mounting of primary metering equipment on pole)

Aluma-Form	PMM Series
Turner	3CT-PT

fm  
April 1989

fm - Bracket, Arrester and Pothead Extension

For Distribution Arrester and Cutout - Pole Mounting

<u>Manufacturer</u>		<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form		1HCA-18 Series	R3CA-48
American Connector Engineering		EMB-3-18-GC	
Anderson/ Square D	12.5/7.2 kV 24.9/14.4 kV	COB-E-120-TGL COB-E-180-TGL	
Chance		C653-1038	C653-1056
Continental	12.5/7.2 kV 24.9/14.4	IACB-12-5LGE IACB-18-5LGE	GPB-3-0-568M-3012-CAT 12 GPB-3-0-568M-4017-CAT 12
Dixie	12.5/7.2 kV 24.9/14.4 kV	D-1580 D-1583	D27211-G
Flagg (MIF)	12.5/7.2 kV 24.9/14.4 kV	PA613B PA619B	7510-730 7510-740-17
Hughes Brothers		892-18	670-40
Joslyn	12.5/7.2 kV 24.9/14.4 kV	J26190 J26191	
McGraw-Edison		DC34B3	
Power Line Hardware	12.5/7.2 kV	CA-12-3GL	
Reliable/ Bethea	12.5/7.2 kV 24.9/14.4 kV	VIB3-18-R1-GC-C VIB3-18-GC	
Universal Electric		SAB-3-18-GC	

For two distribution arresters in parallel or one  
arrester and cutout - crossarm mounted

<u>Manufacturer</u>	<u>Catalog No.</u>
McGraw-Edison	DM23B1

For Intermediate Arrester Mounting

<u>Manufacturer</u>		<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form		WBMA-1	R3CSA-48
Reliable/Bethea	12.5/7.2 kV	VIB3-18-R1-GC-C	

fn - Bracket, Cutout Extension

<u>Manufacturer</u>		<u>Catalog Number</u>
Aluma-Form		1HCA-C-18
American Connector Engineering		EMB-3-18-GC
Anderson Elec./ Square D	12.5/7.2 kV 24.9/14.4 kV	COB-E-120-TGL COB-E-180-TGL
Chance		C653-1038
Continental	12.5/7.2 kV 24.9/14.4 kV	IACB-12-5-LGE IACB-18-5-LGE
Flagg (MIF)	12.5/7.2 kV 24.9/14.4 kV	PA613B PA619B
Hughes Brothers		892-18
McGraw-Edison		DC34B1
Power Line Hardware	12.5/7.2 kV	CA-12-3GL
Reliable/Bethea	12.5/7.2 kV 24.9/14.4 kV	VIB3-12F-GC VIB3-18-GC
Universal Electric		SAB-3-18-GC

fo  
July 1988

fo - Bracket, Transformer Secondary, Insulated

<u>Manufacturer</u>	<u>Bracket Without Insulator</u>	<u>Bracket With 2-1/4" Diameter Spool Insulator</u>	<u>Bracket With 3-1/8" Diameter Spool Insulator</u>
Chance	-	9113S	9114S
Joslyn	-	J6765-A	J6765
McGraw-Edison	DT4M1	DT4M13	DT4M11
Utilities Service	865	865/208	865/205



## U ae - Arresters, Surge

(Shielded for Underground System Pad-Mounted Equipment)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u>		To obtain experience.
Metal Oxide Elbow Arrester	1356	
10 kV	1/28/88	
167ESA - 10 (15 kV interface)		
18 kV		
273ESA - 18 (25 kV interface)		
<u>Joslyn</u>		
Metal Oxide, Elbow Arrester	1297	To obtain experience
Type ZE, 10, 18kV	4/11/85	
<u>McGraw-Edison</u>		
Metal oxide, AMOV1	1223	To obtain experience.
U.D. 10, 18, 27 kV	11/19/81	
<u>RTE</u>		
Metal Oxide Elbow Arrester	1185	To obtain experience.
M.O.V.E. 9, 18 kV	4/24/81	

Conditional List  
U ae(2)  
April 1989

U ae - Arresters, Surge  
(For Underground System Pole Risers)

General Electric

Metal Oxide, Tranquell** U.D. II 9, 10, 18 kV	1292 1/10/85	To obtain experience.
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Metal Oxide, Tranquell Intermediate Class 9, 10, 18 kV	1197 10/9/80	To obtain experience.
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Joslyn

Metal Oxide, Type ZJ U.D. 9, 10, 18 kV	1266 9/22/83	To obtain experience.
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Metal Oxide, Type ZR Intermediate Class* 9, 10, 18 kV	1266 9/22/83	To obtain experience.
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McGraw-Edison

Metal Oxide, AVZ 1B 9/10, 18, 27 kV	1223 11/9/81	To obtain experience.
--	-----------------	-----------------------

Metal Oxide AZR Intermediate class 10, 18 kV	1287 9/27/84	To obtain experience.
--	-----------------	-----------------------

Ohio Brass

Metal oxide type DynaVar 9, 10, 18kV Porcelain, VR Polymer, PVR	1236 6/10/82 1378 2/9/89	To obtain experience
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Metal Oxide, DynaVar Intermediate Class 9, 10, 18 kV	1236 6/10/82	To obtain experience.
--	-----------------	-----------------------

Westinghouse

Metal Oxide, HMX HEAVY DUTY: 9, 10, 18 kV	1320 5/8/86	To obtain experience.
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Metal Oxide, RMX Intermediate Class* 9, 10, 18 kV	1320 5/8/86	To obtain experience.
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\*Has intermediate class arrester characteristics but does not have intermediate class venting capability.

\*\*A non fragmenting U.D. II Arrester is available for 9 & 10 kV designs at higher cost when specified.

U an - Transformers, Distribution  
Pad-Mounted, Dead-Front

(For unit residential underground application, 7.2/12.5  
and 7.6/13.2 kV, 5-25 kVA single phase only)

<u>Manufacturer</u>	<u>Type</u>
Central Moloney	"REA-Mini-LP" 10-25 kVA
ERMCO	"REA-Micro Pad" 10-25 kVA
General Electric	"Micro-Mini-Pad" 10-25 kVA
Howard	"Spacesaver Pad" 10-25 kVA
McGraw-Edison	"Series 10/15 REA" 10-25 kVA
NECO/Hammond	"Little NECO-R" 10-25 kVA
Pauwels-Chance	"Turf Hugger II" 10-25 kVA
RTE	"Ranch Runner" 10-25 kVA
VanTran	"Mite'E'Mini" 5-25 kVA
Westinghouse	"Micro-Pak U-5" 10-25 kVA

Conditional List

U an(1)

April 1989

U an - Transformers, Distribution  
Pad-Mounted, Dead-Front

(For underground application)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
General Electric Single phase transformers with internal Tranquell Under-Oil Arrester "Mini-Pad III - REA" (10-167 kVA) 7.2/12.5 and 7.6/13.2, 14.4/24.9 kV and Dual Voltage "Micro-Mini-Pad" (10-25 kVA) 7.2/12.5 and 7.6/13.2 kV	1316 (3/6/86)	To obtain experience.
Three phase transformers with internal Tranquell Under-Oil Arrester "Compad IV-REA" 7.2/12.5, 7.6/13.2, 14.4/24.9 kV and Dual Voltage	1316 (3/6/86) 1363 (5/26/88)	To obtain experience. To obtain experience.
Single-phase "Mini Pad-REA" 25 & 50 kVA transformers with amorphous metal cores 7.2/12.5, 7.6/13.2, 14.4/24.9 kV and Dual Voltage	1320 5/8/86	To obtain experience.
Three-phase transformers 75-500 kVA with amorphous metal core "Compad IV-REA" 7.2/12.5, 7.6/13.2, 14.4/24.9 kV and Dual Voltage	1363 (5/26/88)	To obtain experience.
Hevi-Duty Three-Phase SBI-DF 750-2500 kVA 7.2/12.5 & 7.6/13.2 kV	970 (7/1/71) 1153 (12/21/78)	1. To obtain experience. 2. Test reports on 750 and 2000 kVA to be submitted as available.
RTE 7.2/12.5, 7.62/13.2, 14.4/24.9 kV and dual voltage, single phase, self protected, padmount distribution transformer with Magnex Interrupter	1376 1/12/89	To obtain experience
Square D Three-phase Class 7230 REA 75-2500 KVA 12.5/7.2 & 13.2/7.6 kV	1298 (4/25/85)	To obtain experience.

U fz - Transformer Connector Block, Insulated  
Multiple Cable Connectors

Watertight - For use in all locations.

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Blackburn	Lug	SCU, with lugs and sleeves
Burndy	Lug	Stud Mole with sealing sleeve
Utilco	Set Screw	PTF-SS, Watertight Insulated transformer Connector block
<u>Non-Watertight - For use in above grade locations only</u>		
Alcoa	Lug	Interchange 1 ABBD Series (Disconnectable) Use with A9 insulating boots
Alcon	Set Screw	VBTT Series with double sealing sleeve
Connector Mfg. Co.	Set Screw	Uni-Joint Bar Connectors, (Series RLS, NSM-C, NDS-C, NSC ZS-C, ZSU-C, RLUS) (Permanent)
	Set Screw	Uni-Joint Bar Connectors, (Series RLSS, NSSM-C, NSSC, ZQC, ZQU-C, RLUSS) (Disconnectable)
Electrical Spec. Prod.	Lug	Type SU (Permanent)
	Lug	Types SUR and RDSR (Removable) (With Types LA and A1 lugs and Sleeve kits)
	Set Screw	Type UPS-I (Permanent) Type UPM-I (Disconnectable)
Fargo	Bolted	GUC Series
	Set Screw	GUS-600S Series
Homac	Lug	DF Series
	Lug	FTU 125 Series (Disconnectable) with flood seal sleeve kit
	Set Screw	LRT Series
Blackburn	Set Screw	TSB-J58C (Permanent)
	Set Screw	TSB-D58C (Disconnectable)
Penn Union	Lug	Type DBAT (Permanent)
	Lug	Type DBAT-LH (Disconnectable) Use with Series DBTB, DBTBF and DBTH lug and Sleeves kits
Reliable	Set Screw	15912-REA (Disconnectable)
Utilco	Set Screw	PTF-IN (Permanent)
	Set Screw	PTF-CJU (Disconnectable)

Note: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.



U fz-2  
July 1988

U fz - Transformer Connector Block, Insulated

Single Cable Connectors

Non-Watertight - For use in above grade locations only

Manufacturer

Electrical Specialty Products

Catalog Number

Type SM transformer bushing  
connector kit. (Stud to  
aluminum cables through 350 kcmil)

NOTE: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.



<u>Manufacturer</u>	U gc - Shield, cable riser	<u>Length (Feet)</u>
	<u>Dia. (Inches)</u> <u>Galvanized Steel</u>	
Chance	2 - 3 - 3-1/2	5 - 9
*Electrical Materials	2 - 3 - 4 - 5	5
*#Fargo	2 - 3 - 3-3/4 - 5	5 - 8 - 10
*Joslyn	2 - 3 - 3-1/2	5 - 8
*McGraw-Edison	2 - 3 - 4	3 - 5 - 10
Midland-Ross (Kindorf Snapduct)	2 1/2 - 3 1/2 - 5 (14 ga. galv. steel)	2 1/2 - 5 - 10

	<u>Plastic and Fiberglass</u>	
Carlton	2 - 3 - 4 - 5	10
Custom Plastics	2 - 3 - 4 - 5	5 - 10
*Electrical Materials (plastic)	2 - 3 - 4 - 5	5 - 10
*Hercules (Haskon) (plastic) (Power Mold, I, II, III)	2 - 3 - 4 - 5	5 - 9 - 10
*Joslyn (plastic)	2 - 3 - 4 - 5	5 - 10
*Nordic (fiberglass)	2 - 3 - 5	5 - 10

(Order by size and length)

#All sizes available with galvanized finish or painted-over galvanizing.

\*All sizes available with back plate.

	<u>Full Round**</u>	
Smith Fiberglass Products (standard wall)	2 - 3 - 4 - 5	30

\*\*Full round riser shield is to be mounted directly to the surface of the pole with no standoffs.

U gk-1  
April 1989

U gk - Terminations, Indoor

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter.)

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Blackburn</u>	Type SKD Stress Cone (15, 25 & 35 kV)
<u>Elastimold (ESNA)</u>	Style 35-MSD (15, 25 & 35 kV)
<u>General Electric</u>	Termi-Matic, Type A or G (15, 25 & 35 kV)
<u>Joslyn</u>	J9275 (15 kV)
<u>Plymouth/Bishop</u>	Stress-Wrap (15, 25 & 35 kV)
<u>Raychem</u>	Thermofit HVT (15, 25 & 35 kV) CST (15 kV)
<u>RTE</u>	Fasterm Stress Cone (15 & 25 kV)
<u>Sigmaform</u>	Q-Cap Series STK-I (15 & 25 kV)
<u>3M</u>	Quick Term II Series (15, 25 & 35 kV)

U gk - Terminations, outdoor  
(with mounting hardware)\*

(when ordering, specify conductor size, type whether  
copper or aluminum, insulation diameter, and type of  
mounting desired.)

<u>Manufacturer</u>	<u>Catalog Number</u>
<u>Blackburn</u>	Type MT (15, 25 and 35 kV)
<u>Elastimold (ESNA)</u> Style 35-MT (35 kV)	Style 16-THG (15 and 25 kV)
<u>General Electric</u>	Termi-Matic, Type G (15, 25 and 35 kV)
<u>Joslyn</u>	"Easy-On II" (15, 25 and 35 kV)
<u>3M</u>	5900 Series 15 kV (4/0 AWG and larger) 25 kV (#2 AWG thru 750 kcmil) "Quick-Term II" (15, 25 and 35 kV) 5600 Series (for bare concentric neutral cable) 5640 and 5650 Series (for jacketed cable)

\*Mounting hardware is used to attach termination to mounting bracket (U hd or  
U hj).

U gk-2.1  
April 1989

U gk - Terminations, Outdoor  
(With Mounting Hardware)\*

(When ordering, specify conductor size, type, whether  
copper or aluminum, insulation diameter, and type of  
mounting desired.)

Manufacturer

Catalog Number

G & W

"Eliminator" 15 kV, E  
25 kV, E  
35 kV, E

Plymouth/Bishop

SWO Kit (15, 25 and 35 kV)

Raychem

Thermofit HVT (15, 25 and 35 kV)  
CST (15 kV)

RTE

Fasterm Series (15 & 25 kV)

Sigmaform

Q-Cap Series STK (15 & 25 kV)

\*Mounting Hardware is used to attach termination to mounting bracket (U hd or  
U hj).

U gn - Enclosures, equipment

Applicable Specifications: "REA Specifications for Equipment Enclosures,"  
U-4

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Durham</u>	Series 4242 (dead-front) Series 5454 (dead-front) Series 3452 (dead-front)
<u>Electrical Equipment</u>	TH1-DF Series (dead-front)
<u>Elliott</u>	EPM-PTS (dead-front)
<u>K &amp; M Engineering</u>	KM Series (Dead-front with penta-head bolt)
<u>Malton Electric</u>	1-Phase Single Unit (dead-front)
<u>Maysteel</u>	E/L100 (dead-front)
<u>Northern Plastics</u>	Garrison NPG Series (dead-front)
<u>Western Power Products</u>	FG-DF1 (dead-front) FG-DF3 (dead-front)

NOTE: The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.

U gn-2  
April 1989

U gn - Enclosures, Equipment

Sectionalizing Enclosures

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Carolina Dielectrics</u>	Model 0501
<u>Durham</u>	15 kV AMSP-0 (Single-Phase) AMSP3-0 (3-Phase) 25 kV AMSP2-0 (Single-Phase) AMSP4-0 (3-Phase)
<u>Electrical Equipment</u>	LPT-228-P LPT-249-P 3Ø LPT-266-P 3Ø
<u>Maysteel</u>	CW200 Series CW300 Series
<u>Nordic</u>	ND Series
<u>Western Power Products</u>	Model 24-1 Model 34-2 Model SPM-320 1Ø Model SPM-540 3Ø
<u>Shallbetter</u>	SPMS Series (dead-front)
<u>Willow</u>	WHC Series WRC Series

NOTE: The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.



U go  
July 1988

U go - Fault Indicator  
(For Construction Unit UM6-4)

<u>Manufacturer</u>	<u>Type</u>
Edison Control Corporation	Series EC100 (single phase) Series EC300 (three phase) Available with mounting kit KT5002)
Fisher Pierce	Series 1514 (To be used on single-phase circuits only)
McGraw-Edison	Linam
RTE	TPR, LV, MR

U gp-1  
April 1989

U gp - Connector Blocks and Splices, Secondary

Watertight - For Use In All Locations

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Alcon	Set Screw	VPB Series
AMP	Compression	600 Volts secondary UG Distribution 4-way and 6-way bus system
Blackburn	Lug Set Screw	Series UP(with lugs and sleeves) Series USB(1000 amp bus with sleeves)
Burndy	Lug	URD Mole
Connector Mfg. Co.	Compression Set Screw	Utilug Sure Seal Splice Kits, Series SSK, SSKL Uni-Joint Sure Seal Series SSBC
Electrical Spec. Products	Lug Set Screw	Type UC (8 AWG - 500 kcmil) (with LA lug and sleeve) Type UB (with sleeve) splice Type ACL-HSH (6 AWG - 500 kcmil)
Fargo	Set Screw	GU-600 Series
Homac	Lug Lug Set Screw Set Screw	FS-95 Series with flood seal sleeve kit (8AWG - 350 kcmil) FS-125 Series with flood seal sleeve kit (350 - 500 kcmil) SHC Series RAB Series
Kearney	Compression Compression	HCR HAR
Penn Union	Lug	DBA Series with DBTB, DBTBF and DBTH Series lug and sleeve kits
Reliable	Set Screw	15903-15908, 15910 with sleeve kit (4 AWG - 350 kcmil) 15911 with sleeve kit (500 - 750 kcmil)
Utilco	Set Screw	Safety Sub Splice - USPA-350SS

U gu - Power Pedestal  
Refer to Drawings UK6 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power Pedestals," U-6

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Armorcast</u>	Polymer concrete frame and cover with fiberglass reinforced polyester skirting 6001 Series.
<u>Associated Plastics</u>	Molded polyethylene with galvanized steel or plastic cover Catalog Nos. 1730-1, 3; 1324-1, 3
<u>Blackburn</u>	Molded polyethylene with galvanized steel cover and ground lug. Catalog No. SDR-2PG
<u>Burndy</u>	Molded polyethylene with galvanized steel cover. Catalog No. URD20G23
<u>Carson</u>	Molded polyethylene with plastic cover Catalog No. 1324-12B and 1730-12B
<u>CDR Series (Homac)</u>	Fiber reinforced polymer concrete PA Series with penta-head bolts

U gu-2.1  
July 1988

U gu - Power Pedestal  
Refer to Drawings UK6 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power  
Pedestals," U-6

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Dexol</u>	HDPE, DX-101 DX-102 ABS, DX-101HD DX-102HD
<u>Fargo</u>	HDPE, B-100R Series ABS, B-200R Series
<u>Highline</u>	HL50AE HL51
<u>Mo. Ped.</u>	Molded high density polyethylene with HDPE cover, Model No. 186
<u>Pen-Cell</u>	Molded polyethylene with galvanized steel or plastic cover Catalog No. PE-20-REA Polycarbonate Box cover Catalog No. AG-20-6-REA

U he - Enclosures, Sectionalizing Equipment

(200 and 600 amp.)

Manufacturer

Catalog Number

Joslyn

Types PG6, PFG6, LPG6, LPFG6, SG6, SFG6  
(submersible and pad-mounted, fused or unfused) single and three-phase switching equipment, 200 and 600 amp, 15 or 25 kV

RTE

Type LBS, single- and three-phase,  
pad-mounted 15 kV  
Type R-VAC, three-phase vacuum switchgear,  
15-25 kV

S & C

Mark III, Model PMH (with option G-7),  
15-25 kV, 600 amp., three-phase  
switching and 200 amp., single-pole  
switching  
Model PME-15-25 kV, Fully enclosed live  
parts at all times, three-phase  
switching and 200 amp single pole  
switching

Trayer

800 Series, pad mounted three-phase vacuum  
switching equipment, 200 and 600 amp.,  
15-25 kV with or without fusing  
501 submersible vacuum fuse enclosure,  
deadfront 200 or 600 amp., 15-25 kV  
Type SSA (submersible, fused and unfused)  
200 and 600 amp., 15-25 kV

Note 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

Note 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U hf(1)  
Conditional List  
April 1989

U hf - Jacketed Cable Restoration Kits  
(For resealing concentric neutral wires after  
installation of splices in jacketed underground cable.)

(When ordering, specify diameter of cable over jacket.)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold</u> PCS-1 Power Cable Seal	1341 (5/14/87)	To obtain experience.
<u>Homac</u> CNC Series Concentric Neutral Cover	1365 (6/23/88)	To obtain experience.
<u>Raychem</u> WCSM (Tubing Type) MWTM (Tubing Type) CRSM (Wraparound Type)	1354 (12/31/87)	To obtain experience.
<u>Sigmaform</u> Series SSK (Heat Shrink)	1381 (3/30/89)	To obtain experience.
<u>3M</u> HSJ Series (Heat Shrink) SJ Series (Cold Shrink)	1369 (9/8/88)	To obtain experience.



U hr - Secondary tap or splice cover, submersible

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
Blackburn	Type WDBS (#2 through #4/0) Type DBS (250 KCMIL through 1000 KCMIL)
Connector Mfg. Co.	Utilug Sure Seal
Elastimold (ESNA)	Style 86
Electrical Spec. Prod.	TSC Series
Homac	FSS Series
Kearney	Aqua-Seal Kit
Plymouth/Bishop	Splice-Wrap
3M	PST Series 8420

Heat Shrink Tubing (with sealant throughout)

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
AMP	Black heat-shrink tubing
Electrical Spec. Prod.	HSH
Panduit	Heat shrink insulating cover
Raychem	WCSM cable sleeves
Sigmaform Corporation	Sigmaform heat-shrinkable products
3M	ITCSN tubular cable sleeve ICRS wraparound cable sleeve

U hv-1  
July 1988

U hv - Cable, Underground  
15 kV Cable

Applicable Specification: REA Specification U-1  
Conductor: Copper or Aluminum - #2 AWG through 1000 kcmil  
Insulation: Crosslinked (XLP) Polyethylene, Ethylene  
Propylene Rubber (EPR), or Crosslinked  
Polyethylene with Tree-retardant additives  
(XL-TR)  
Neutral: Copper Concentric Neutral  
Jacket (If Used): High Molecular Weight Polyethylene

<u>Manufacturer</u>	<u>Insulation(s)</u>	<u>Flat Strap Neutral Available</u>
Cablec	XLP, EPR, XLP-TR	Yes
Conductor Prod.	XLP, XLP-TR	Yes
Hendrix	XLP, EPR, XLP-TR	No
Kerite	EPR	Yes
Okonite	XLP, EPR, XLP-TR	Yes
Pirelli	XLP, EPR, XLP-TR	Yes
Reynolds	XLP, EPR, XLP-TR	Yes
Southwire Furakawa	XLP, XLP-TR	No

\*For grounding purposes insulated jacketed cables must be treated like overhead lines, i.e., at least four ground rods must be installed per mile in accordance with the NESC. (This does not include service grounds, etc., but does include equipment grounds.) Additional grounding may be necessary in soils with higher resistivity. In splices or tap connections, a good seal should be achieved to exclude moisture. It is recommended that any place that the jacketing is cut (including the connections to ground rods), it be done above ground in a pedestal.

U hv - Cable, Underground  
25 kV Cable

Applicable Specification: REA Specification U-1  
Conductor: Copper or Aluminum - #1 AWG through 1000 kcmil  
Insulation: Crosslinked (XLP) Polyethylene, Ethylene Propylene Rubber (EPR), or Crosslinked Polyethylene with Tree-retardant additives (XLP-TR)  
Neutral: Copper Concentric Neutral  
Jacket: High Molecular Weight Polyethylene

<u>Manufacturer</u>	<u>Insulation(s)</u>	<u>Flat Strap Neutral Available</u>
Cablec	XLP, EPR, XLP-TR	Yes
Conductor Prod.	XLP, XLP-TR	Yes
Hendrix	XLP, EPR, XLP-TR	No
Kerite	EPR	Yes
Okonite	XLP, EPR, XLP-TR	Yes
Pirelli	XLP, EPR, XLP-TR	Yes
Reynolds	XLP, EPR, XLP-TR	Yes
Southwire Furakawa	XLP, XLP-TR	No

\*For grounding purposes insulated jacketed cables must be treated like overhead lines, i.e., at least four ground rods must be installed per mile in accordance with the NESC. (This does not include service grounds, etc., but does include equipment grounds.) Additional grounding may be necessary in soils with higher resistivity. In splices or tap connections, a good seal should be achieved to exclude moisture. It is recommended that any place that the jacketing is cut (including the connections to ground rods), it be done above ground in a pedestal.

U hv-3  
April 1989

U hv - Cable, Underground

600 Volt Cable

Applicable Specification: REA Specification U-2  
Conductor : Copper, #4 AWG and larger  
Aluminum, #2 AWG and larger  
Insulation : Cross-Linked polyethylene (XLPE)

<u>Manufacturer</u>	<u>Type Conductor</u>
Alcan	Copper or Aluminum
Cablec	Copper or Aluminum
Collyer	Copper or Aluminum
Conductor Products	Aluminum
Essex	Copper or Aluminum
General Electric	Copper or Aluminum
Kaiser	Aluminum
Okonite	Copper or Aluminum
Phelps Dodge	Copper or Aluminum
Phillips Cables, Inc. (Marked "Phillips W")	Copper or Aluminum
Pirelli	Copper or Aluminum
Reynolds	Copper or Aluminum
Rome Cable	Copper or Aluminum
Southwire	Copper or Aluminum

NOTE: The manufacturers shown above have indicated that their 600 volt cable is suitable for use on 480 volt corner grounded delta circuits.

The above cable may be supplied with UL label for Type USE.

U hv - Cable, Underground

600 Volt Multi-Conductor Cable

Applicable Specification: REA Specification U-2  
Conductor : Copper, #4 AWG and larger  
Aluminum, #2 AWG and larger  
Insulation : Cross-Linked polyethylene (XLPE)  
Cable Configuration : 3 Insulated Conductors Triplexed

<u>Manufacturer</u>	<u>Type Conductor</u>
Alcan	Copper or Aluminum
Cablec	Copper or Aluminum
Conductor Products	Aluminum
Essex	Copper or Aluminum
General Electric	Copper or Aluminum
Kaiser	Aluminum
Okonite	Copper or Aluminum
Phillips Cables, Inc. (Marked "Phillips W")	Copper or Aluminum
Pirelli	Copper or Aluminum
Reynolds	Copper or Aluminum
Rome Cable	Copper or Aluminum
Southwire	Copper or Aluminum

The above cable may be supplied with UL label for Type USE.



U hw  
January 1989

U hw - Warning sign

Applicable Specifications: REA Drawings UM12-1 and UM12-2

<u>Manufacturer</u>	<u>Size (inches)</u>	<u>Danger Sign Catalog No.</u>	<u>Caution Sign Catalog No.</u>
Brady*	7 x 10	46133	46043
	10 x 14	46131	46041
Eastern Metal*	7 x 10	REA 12-1-710	REA 12-2-710
	10 x 14	REA 12-1-1014	REA 12-2-1014
	14 x 20	REA 12-1-1420	REA 12-2-1420
	20 x 28	REA 12-1-2028	REA 12-2-2028
Electromark	7 x 10	REA-1-7x10-SV	REA-2-7x10-SV
	7 x 10	REA-1-7x10-AC	REA-2-7x10-AC
	10 x 14	REA-1-10x14-SV	REA-2-10x14-SV
	10 x 14	REA-1-10x14-AC	REA-2-10x14-AC
	14 x 20	REA-1-14x20-SV	REA-2-14x20-SV
	14 x 20	REA-1-14x20-AC	REA-2-14x20-AC
	20 x 28	REA-1-20x28-SV	REA-2-20x28-SV
	20 x 28	REA-1-20x28-AC	REA-2-20x28-AC
Lyle*	7 x 10	UM12-1-710	UM12-2-710
	10 x 14	UM12-1-1014	UM12-2-1014
	14 x 20	UM12-1-1420	UM12-2-1420
	20 x 28	UM12-1-2028	UM12-2-2028
May Advertising	7 x 10	MY710C	MY710B
	10 x 14	MY1014C	MY1014B
	14 x 20	MY1420C	MY1420B
	20 x 28	MY2028C	MY2028B
For pressure sensitive decal add "D" prefix			
Truck Sign Service*	7 x 10	TSD-710	TSC-710
	10 x 14	TSD-1014	TSC-1014
	14 x 20	TSD-1420	TSC-1420
	20 x 28	TSD-2028	TSC-2028
Lem	7 x 10	LSS-1400	LSS-1500
	10 x 14	LSS-1401	LSS-1501
	14 x 20	LSS-1402	LSS-1502

\*Reflective signs also available.

The signs listed on this page are to be secured to equipment and transformer enclosures by means of an adhesive or by welding. Screws and rivets are not to be used.



U hy - Splice, Underground, Permanent

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

Manufacturer

Catalog Number

Elastimold (ESNA)

15 kV

Style 650-S, straight splice

Style 15PCJ-2, straight splice,  
through 1250 MCM

Style 650-Y, Y-Splice

25 kV

Style K650-S, straight splice

Style K650-Y, Y-splice

Style 25 PCJ-2, straight splice,  
through 1250 MCM

35 kV

Style M650S, straight splice

Blackburn

15 kV - S65B Straight splice

25 kV - S65C straight splice

RTE

15 kV

2604904B Series straight splice (MPS-600)

25 kV

2604905B Series straight splice (MPS-600)

U ja-1  
April 1989

U ja - Transformer Pad

<u>Manufacturer</u>	<u>Catalog Number</u>
<u>Armorcast</u>	600 Series*, Polymer Concrete
<u>Associated Plastics</u>	API 4000 Series RPM
<u>Carolina Dielectrics</u>	Model 0502-1, Fiberglass, Size: 40" x 44"
<u>CDR Systems (Homac)</u>	TP Series*, Fiber reinforced polymer concrete
<u>Chance</u>	C107-0162 and C107-0171 Fiberglass, Size: 40" x 44"
<u>Diversitech</u>	TP Series - Fiberglass reinforced concrete
<u>Electri-Glass</u>	Fiberglass LP-4145, 41" x 45"
<u>Formex</u>	Model TP-REA, Molded polyethylene
<u>ICU, Inc</u>	Dwg. No. 730126-2, Molded polyethylene Size: 42" x 42"

\*Order by catalog number and size.

U ja - Transformer Pad

<u>Manufacturer</u>	<u>Catalog Number</u>
<u>Heil Rotomold, Inc.</u>	T Series*, High density polyethylene
<u>Highline</u>	HL-46B, Fiberglass, Size: approx. 42" x 42"
<u>Major Frame-Crete</u>	ETPP precast, cellular concrete, 42" x 42"
<u>Nordic</u>	TP Series, Fiberglass
<u>Plastic Structures</u>	No. 40402012, Molded polyethylene, Size: 40" x 40"
<u>Quazite Corp.</u>	Composolite - PH Series
<u>Smith Cattleguard</u>	Easi Set T. Series, Precast Reinforced Concrete
<u>Thermodynamics</u>	Poly-Pad, PR Series*, Molded polyethylene

\*Order by catalog number and size.

U ja-2  
April 1989

U ja - Transformer Pad (Sleeve)

<u>Manufacturer</u>	<u>Catalog Number</u>
<u>Associated Plastics</u>	Transformer pad and box assembly, api 4242 RPM Pad and 1730 Box Transformer Pads, API 16 and API 45
<u>Concast</u>	Fibercrete modular bases
<u>Electri-Glass, Inc.</u>	BP-2000
<u>Formex</u>	Transformer pad and box assembly TP-REA Series Pad 1730-A Series Box
<u>Highline</u> D-32"	Box pad HL-45A, Size: L-43", W-34-1/2",
<u>Maysteel</u>	CW-GS-P Series
<u>Nordic</u>	GS Series Fiberglass

\*Order by catalog number and size.



